

I Claim:

1. A multiple-fold umbrella shaft comprising:

a plurality of hollow cylindrical tubes gradually increasing tube diameter from an innermost tube to an outermost tube, and telescopically engageable with one another about a longitudinal axis of a central shaft; each said tube having a plurality of reinforcing ribs longitudinally formed, evenly distributed and radially recessed inwardly in a cylindrical tubular surface of each said tube, with any two neighboring reinforcing ribs defining an equal central angle about the longitudinal axis of the central shaft; whereby upon assembling of the plurality of said tubes to form a multiple-fold umbrella shaft, an inner tube has a plurality of said reinforcing ribs slidably engaged with a plurality of said reinforcing ribs of an outer tube disposed around said inner tube for preventing from twisting or vibration of the tubes of the central shaft.

2. An umbrella shaft according to Claim 1, wherein each said reinforcing rib has a curvature radius r ranging from $1/2R$ to $1/10R$, wherein R is a radius of said innermost tube when folding the tubes for closing the umbrella.

3. An umbrella shaft according to Claim 2, wherein said reinforcing ribs of said tubes have centers of the curvature radii of said reinforcing ribs radially aligned to be a radial line which is radially aligned with a longitudinal axis of the central shaft;

said longitudinal axis longitudinally aligned with all centers of the tubes.

4. An umbrella shaft according to Claim 1, wherein said reinforcing ribs are symmetrically or evenly distributed on the perimeter of each said tube of the central shaft in equal central angles, each said central angle defined in between every two neighboring reinforcing ribs about a center of each said tube or about the longitudinal axis of the shaft.
5. An umbrella shaft according to Claim 1, wherein said inner tube and said outer tube define a tiny annular aperture homogeneously in between the two neighboring tubes having the reinforcing ribs of the inner tube slidably engaged with the reinforcing ribs of the outer tube to prevent from frictional contacting between the two neighboring tubes to enhance a smooth sliding movement of the tubes when folding or unfolding the tubes for closing or opening the umbrella.
6. An umbrella shaft according to Claim 1, wherein each said tube has a same cross sectional shape, including four reinforcing ribs distributed on a perimeter of each said tube in equal central angles, so that any two neighboring tubes may be easily assembled by quickly matching the reinforcing ribs of an inner tube with a corresponding outer tube.
7. An umbrella shaft according to Claim 1, wherein an upper tube includes a lower enlarged portion; and a lower tube having an

upper contracted portion thereof to couple with the lower enlarged portion of the upper tube for preventing a separation or uncoupling of the two tubes when extending the central shaft for opening the umbrella.

8. An umbrella shaft according to Claim 7, wherein said inner and outer tubes further include a locking means for locking said two tubes of said central shaft when opening the umbrella.
9. An umbrella shaft according to Claim 8, wherein said locking means includes: a plug transversely formed in a lower portion of said inner tube of the central shaft, a locking ball resiliently retained by a tension spring retained within the plug P for normally urging the locking ball outwardly to engage with an inner hole formed in the inner tube and an outer hole formed in the outer tube for coupling or locking the inner and outer tubes for stably positioning the inner and outer tubes as coupled.
10. An umbrella shaft according to Claim 1, wherein said shaft includes six tubes telescopically engaged with one another to form a hexa-fold umbrella shaft.
11. An umbrella shaft according to Claim 10, wherein said six tubes includes an outermost or lowest tube which is formed as a cylindrical shape without any reinforcing rib recessed therein.
12. An umbrella shaft according to Claim 1, wherein said shaft further includes a multiple-fold rib assembly pivotally secured to said shaft for forming a multiple-fold umbrella.